

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
31 July 2003 (31.07.2003)

PCT

(10) International Publication Number
WO 03/062430 A1

(51) International Patent Classification⁷: **C12N 15/61**, 15/54, 1/14, 1/19, C12P 7/10, 7/20, 7/46, 7/54, 7/56, 13/04, 35/00

(21) International Application Number: PCT/NL03/00049

(22) International Filing Date: 23 January 2003 (23.01.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
02075266.3 23 January 2002 (23.01.2002) EP

(71) Applicant (*for all designated States except US*): ROYAL NEDALCO B.V. [NL/NL]; P.O. Box 6, NL-4600 AA Bergen Op Zoom (NL).

(72) Inventors; and

(75) Inventors/Applicants (*for US only*): OP. DEN CAMP, Hubertus, Johannes, Marie [NL/NL]; Randenrade '60, NL-5807 BM Oostrum (NL). HARHANGI, Harry, Ramanoedj [NL/NL]; Mooieweg 84, NL-6836 AJ Arnhem (NL). VAN DER DRIFT, Christiaan [NL/NL]; Windvleugel '36, NL-6581 DX Malden (NL).

(74) Agent: VAN WESTENBRUGGE, Andries; Nederlandse Octroobureau, Scheveningseweg 82, P.O. Box 29720, NL-2502 LS The Hague (NL).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

A1

WO 03/062430

(54) Title: FERMENTATION OF PENTOSE SUGARS

(57) Abstract: The present invention relates to host cells transformed with a nucleic acid sequence encoding a eukaryotic xylose isomerase obtainable from an anaerobic fungus. When expressed, the sequence encoding the xylose isomerase confers to the host cell the ability to convert xylose to xylulose which may be further metabolised by the host cell. Thus, the host cell is capable of growth on xylose as carbon source. The host cell preferably is a eukaryotic microorganism such as a yeast or a filamentous fungus. The invention further relates to processes for the production of fermentation products such as ethanol, in which a host cell of the invention uses xylose for growth and for the production of the fermentation product. The invention further relates to nucleic acid sequences encoding eukaryotic xylose isomerases and xylulose kinases as obtainable from anaerobic fungi.